WIRELESS CHARGING ACCESSORY APPARATUS

CROSS-REFERENCE TO RELATED APPLICATION(S)

[0001] This application claims the benefit under 35 U.S.C. §119(a) of a Korean patent application filed on Dec. 9, 2015 in the Korean Intellectual Property Office and assigned Serial number 10-2015-0175298, the entire disclosure of which is hereby incorporated by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to a wireless charging accessory apparatus. More particularly, the present disclosure relates to an accessory apparatus that is electrically connectable with a mobile device and is capable of wirelessly charging a wearable device or electronic device placed thereon.

BACKGROUND

[0003] Recently, mobile devices or wearable devices may support both wired charging and wireless charging. Wireless charging may be achieved by using electromagnetic induction, magnetic resonance, or the like.

[0004] A mobile device or wearable device may be wiredly charged through a travel adaptor connected to a power source. The mobile device or wearable device may also be wirelessly charged through a wireless charging pad.

[0005] It is necessary to charge a mobile device or wearable device through a travel adaptor or wireless charging pad when remaining battery power is low or insufficient.

[0006] The above information is presented as background information only to assist with an understanding of the present disclosure. No determination has been made, and no assertion is made, as to whether any of the above might be applicable as prior art with regard to the present disclosure.

SUMMARY

[0007] Aspects of the present disclosure are to address at least the above-mentioned problems and/or disadvantages and to provide at least the advantages described below. Accordingly, an aspect of the present disclosure is to provide a wireless charging accessory apparatus that is capable of electrically connect with a mobile device and wirelessly charge a wearable device or electronic device placed thereon.

[0008] In accordance with an aspect of the present disclosure, an accessory apparatus for wirelessly charging an external device is provided. The accessory apparatus includes a front cover, a rear cover to accommodate a mobile device, and a coupling member to link the front cover and the rear cover. The accessory apparatus further includes a wireless power control processor, a connector to electrically connect the accessory apparatus to the mobile device, a direct current-alternating current (DC-AC) converter to convert DC power from the connector into AC power, and a transmission coil to wirelessly transmit power through magnetic fields generated by the AC power. The wireless power control processor, the DC-AC converter, and the transmission coil may be arranged in the front cover.

[0009] In accordance with another aspect of the present disclosure, an accessory apparatus is provided. The accessory apparatus includes a first cover to cover or expose a front face of a mobile device, a second cover having a space to accommodate the mobile device, a coupling member to link the first cover and the second cover, and a wireless power transmitter circuit placed in the first cover and configured to wirelessly transmit power through magnetic fields generated by AC power that is obtained via DC-AC conversion from DC power of a battery of the mobile device accommodated in the second cover.

[0010] In accordance with another aspect of the present disclosure, an accessory apparatus is provided. The accessory apparatus includes a first cover to cover or expose a front face of a mobile device, a second cover having a space to accommodate the mobile device, a coupling member to link the first cover and the second cover, a wireless power receiver circuit placed in the second cover and configured to wirelessly receive power from the mobile device accommodated in the second cover, and a wireless power transmitter circuit placed in the first cover and configured to wirelessly transmit power through magnetic fields generated by AC power that is obtained via DC-AC conversion from DC power of the wireless power receiver circuit placed in the second cover.

[0011] In accordance with another aspect of the present disclosure, an accessory apparatus is provided. The accessory apparatus includes a housing configured to at least partially cover one face of a mobile device and having a substantially flat region, a mounting structure placed at one face of the housing and configured to be removably mounted on the mobile device, a connector placed on the one face of the housing and configured to draw power from the mobile device, a wireless charging transmitter circuit electrically connected with the connector and placed in the housing, and a conductive pattern at least partially included in the substantially flat region and electrically connected with the wireless charging transmitter circuit.

[0012] Other aspects, advantages, and salient features of the disclosure will become apparent to those skilled in the art from the following detailed description, which, taken in conjunction with the annexed drawings, discloses various embodiments of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The above and other aspects, features, and advantages of certain embodiments of the present disclosure will be more apparent from the following description taken in conjunction with the accompanying drawings, in which:

[0014] FIG. **1**A is a schematic perspective view of a mobile device, accessory apparatus, and wearable device according to an embodiment of the present disclosure;

[0015] FIG. **1**B is a schematic perspective view of a mobile device, accessory apparatus, and wearable device according to an embodiment of the present disclosure;

[0016] FIGS. **2**A, **2**B, and **2**C are schematic block diagrams of a mobile device, accessory apparatus, and wearable device according to an embodiment of the present disclosure;

[0017] FIG. **3**A is a schematic exploded perspective view of an accessory apparatus according to an embodiment of the present disclosure;

[0018] FIG. **3**B is a schematic exploded perspective view of an accessory apparatus according to an embodiment of the present disclosure;